the main body with the cover from being twisted by forming the cut-away groove or the wiring passageway.

While the present invention has been particularly shown and described with reference to particular embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be effected therein without departing from the spirit and scope of the invention as defined by the appended claims.

The invention claimed is:

1. The hinge mechanism of a portable phone comprising:

a housing having a rotary chamber with an opened top portion and a hinge chamber formed at a side of the rotary chamber, for mechanically connecting a cover to a body;

a hinge part which is installed to the hinge chamber, for opening and closing the cover; and

a rotary part which is installed to the rotary chamber, for rotating the cover,

wherein the rotary part includes a cylinder which opens at a lower portion and has a cylinder chamber, which has a cylinder hole formed in an upper portion thereof and an arm projected from the upper portion thereof to be combined with the cover, and which has a cylinder groove formed lengthwise thereon; a compressed spring which is installed in the cylinder chamber; a rotary slip part which has a rotary slip hole formed at a center portion thereof; a fixed slip part which has a polygonal hole formed at a center portion thereof and which has a fixed slip surface on an upper portion; and a center shaft which has a polygonal projection to be combined with the polygonal hole, and which is installed at a bottom surface of the rotary chamber to sequentially extend the polygonal hole, the rotary slip hole, the compressed spring and the cylinder hole.

2. The hinge mechanism of the portable phone according to claim **1**, wherein a pair of balls is installed on the rotary slip surface to be opposite to each other about the rotary slip hole while a pair of hemispheric grooves is formed on the fixed slip surface to face the pair of the balls, and a guide recess is formed to communicate with the hemispheric grooves.

3. The hinge mechanism of the portable phone according to claim **1**, wherein a pair of balls is installed on the fixed slip surface to be opposite to each other about the fixed slip hole while a pair of hemispheric grooves is formed on the rotary slip surface to face the pair of the balls, and a guide recess is formed to communicate with the hemispheric grooves.

4. The hinge mechanism of the portable phone according to claim **1**, wherein a pair of projections is installed on the rotary slip surface to be opposite to each other about the rotary slip hole while a pair of hemispheric grooves is formed on the fixed slip surface to face the pair of the projections, and guide recess is formed to communicate with the hemispheric grooves.

5. The hinge mechanism of the portable phone according to claim **1**, wherein a cylinder projection is formed on an outer peripheral surface of the cylinder, and a pair of stoppers is formed on opposite inner surfaces of the rotary chamber, to which the cylinder projection is latched.

6. The hinge mechanism of the portable phone according to claim **1**, wherein the housing has a cutoff portion through which a wire enters the rotary chamber to electrically connect the cover to the body.

7. The hinge mechanism of the portable phone according to claim **1**, wherein an annular groove is formed at an end of the center shaft, to which a sealing is combined to fix the cylinder to the center shaft.

8. The hinge mechanism of the portable phone according to claim **1**, wherein the hinge chamber opens at a side thereof, which includes a guide recess formed from the opened end to an interior thereof, and the hinge part includes: a hinge spring which is installed in the hinge chamber; a rotary hinge part which is inserted in the hinge chamber to enclose the hinge spring, which has a rotary hinge hole formed at a center portion thereof, which has a rotary hinge projection formed on an outer surface thereof to be combined with the guide recess, and which has a rotary hinge surface continuously and horizontally extending to the rotary hinge hole while having two-wave type of bending when rotating each time; a fixed hinge part which encloses the hinge spring, which has a fixed hinge hole corresponding to the rotary hinge hole, and which has a fixed hinge surface formed on a side thereof to be corresponding to the rotary hinge surface and a fixed hinge projection formed on the other side thereof to be fixed to the body; and a hinge shaft extending through the fixed hinge hole, the rotary hinge hole and the hinge spring to be fixed to the hinge chamber.

9. The hinge mechanism of the portable phone according to claim **1**, wherein the hinge chamber opens at a side thereof, which includes a guide recess formed from an opened end to an interior thereof, and the hinge part includes: a hinge spring which is installed to the hinge chamber; a rotary hinge part which is inserted in the hinge chamber to enclose the hinge spring, which has a rotary hinge hole formed at a center portion thereof, and which has a rotary hinge projection formed on an outer surface to be combined to the guide recess and a plain rotary hinge surface; a fixed hinge part which encloses the fixed hinge part, which has a fixed hinge hole corresponding to the rotary hinge hole, and which has a fixed hinge surface formed on a side thereof to be corresponding to the rotary hinge surface and a fixed hinge projection formed on the other side to be fixed to the body; and a hinge shaft extending through the fixed hinge hole, the rotary hinge hole and the hinge spring to be fixed to the hinge chamber.

10. The hinge mechanism of the portable phone according to claim **1**, wherein the hinge chamber opens at a top portion thereof, which has a hinge chamber hole formed at a side thereof and a guide recess formed lengthwise on an inner surface, and the hinge part includes: a hinge spring which is installed in the hinge chamber; a rotary hinge part which is inserted in the hinge chamber to enclose the hinge spring, which has a hinge spring hole formed at a center portion thereof, and which a rotary hinge projection formed on an outer surface thereof to be combined with the guide recess and a rotary hinge surface formed at a side thereof; a fixed hinge part which encloses the fixed hinge part, which has a fixed hinge hole corresponding to the rotary hinge hole, and which has a fixed hinge surface formed at a side thereof to be corresponding to the rotary hinge surface and a fixed hinge projection formed on the other side thereof to be fixed to the body; and a hinge shaft extending through the fixed hinge hole, the rotary hinge hole and the hinge spring to be fixed to the hinge chamber.

11. The hinge mechanism of the portable phone according to claim **1**, wherein the hinge chamber opens at a top portion thereof, which has a hinge chamber hole formed at a side thereof and which has a guide recess including a horizontal groove formed lengthwise on an inner surface thereof and a vertical groove being normal to the horizontal groove to be